USRT Update 2006

A collaborative effort between the University of Minnesota School of Public Health, the National Cancer Institute, and the American Registry of Radiologic Technologists

Third Survey is Completed

The USRT Third Survey, which began in late 2004, involved contacting 97,000 past study participants to update information on medical history, work history (for dosimetry estimation), and sunlight exposure. The survey was successfully completed with more than 72,000 current and former technologists responding. We are very grateful for this response and the time participants spent completing the survey.

Responses to this survey will allow us to advance several goals including:

- improving estimates of radiation exposure (dosimetry);
- conducting a follow-up study of breast cancer that will include evaluating potential genetic influences on breast cancer risk; and
- evaluating how the combined effects of ionizing radiation and ultraviolet radiation affect the risk for skin cancer and melanoma.

The evaluation of other health outcomes will follow.

Skin Cancer

Skin cancer is the most common type of cancer and can be caused by both ionizing radiation and ultraviolet (UV) radiation from sunlight. The USRT study provides a unique opportunity to study the independent and combined effects of these types of radiation on skin cancer and melanoma, which are also linked to sunlight exposure. More than 4,000 new cases of skin cancer and 700 new cases of melanoma were reported on the third survey.

In the past year, the USRT research team has been developing methods to estimate the effects of UV radiation in the study participants based on questionnaire responses. A pilot UV dosimetry study was completed in 2005 which will help estimate the amount of UV exposures based on questionnaire information. The pilot study participants kept a daily activity diary and wore UV dosimeters. They were queried 6 and 9 months later to determine how much exposure can be assigned to reported activities in the past. This was the first step in developing historical UV exposure estimates.

In the coming year, we plan to recontact participants who reported having skin cancer on the Third Survey to obtain more information about the location of the skin cancer(s) on the body. This information is needed to help distinguish skin cancers caused by sunlight exposure from others that may be linked to occupational radiation exposure or a combined effect of both.

If you were diagnosed with skin cancer or melanoma, please watch for another mailing from the study. Your response is greatly appreciated.

Why Blood Sample Collection is Important to the Study

The USRT study started collecting blood samples in 1998 to begin looking at the role of genetics alone or in conjunction with environmental exposures such as radiation. To date, more than 4,500 samples have been collected from study participants with and without cancer. We greatly appreciate the extra effort these participants have put forth to donate blood samples to the study.

We are now expanding this blood collection effort to include more participants of different ages and with different exposure levels based on work history information reported in the questionnaires.

Participants who are invited to participate in the blood collection effort will be sent a preassembled collection kit complete with instructions and supplies for drawing, packing, and shipping a blood sample to the study lab (at no cost to the participant). If contacted, we hope that you will choose to participate.

Exposure Estimates

One of the greatest challenges for the USRT study is to estimate the amount of ionizing radiation exposure technologists received through their work. This would be easy if accurate and complete dosimetry records were available for all participants in the study for all the years they worked. Because the study is interested in work experience going back many decades, this type of information is not available.

However, using the detailed information collected from the questionnaires, experts' knowledge about radiation exposure, and protection and historical dosimetry data obtained from several hospitals, the military, and a major commercial dosimetry provider, mathematical models are being developed to reconstruct the amount of exposure a technologist likely received. This will allow the research team to evaluate the occurrence of cancer and other diseases in relation to these dose estimates. Substantial progress has been made in this effort and the final models will be completed in the coming year.

Breast Cancer

Breast cancer is an on-going focus of the study. Other than non-melanoma skin cancer, breast cancer is the most frequently diagnosed cancer in women. Previous analyses from the USRT Study showed that women who began working in the early years, especially before 1950, had a higher risk of developing breast cancer.

The study team plans to follow up these initial results by using improved exposure estimates, adding new cases reported on the Third Survey and looking at blood samples donated by participants with and without breast cancer to consider the genetic influences on the radiation-breast cancer association. In the third mailed survey more than 1,800 technologists reported newly diagnosed breast cancers and more than 700 of them have already given a blood sample.

Recent Findings

The USRT study continues to provide unique information about potential health effects of working as a radiologic technologist and the biology of cancer. Publications are posted on the study website (see below) for your convenience.

Highlights of recent and forthcoming publications include an analysis of how measures of DNA repair were associated with cancer risk (Sigurdson, et al. 2005). These results showed a range of DNA repair capability among persons diagnosed with cancer, those without cancer, and others who were cancer-free and had no family history of cancer late in life. Studies of leukemia (Linet, et al. 2005) and non-melanoma skin cancer (Yoshinaga, et al. 2005) showed results similar to those for breast cancer, where risk was associated with working before 1950. No association was seen with working after 1950.

Papers further exploring breast, thyroid and lung cancer are scheduled to be published in 2006 in the journals Cancer and the International Journal of Cancer. As new results of the study become available they will be posted on the study website:

http://www.radtechstudy.nci.nih.gov

Privacy

Over the past twenty-five years, the USRT participants have provided us with personal information and biological samples that are vital to our efforts to evaluate potential health risks related to occupational radiation exposure. We are grateful for your trust and want to assure you that we take great care to protect your privacy and keep confidential all information you have provided to the study. Only authorized study personnel have access to your information and we do not share your name or other personal information with anyone outside the study. Furthermore, we have obtained a Certificate of Confidentiality on behalf of the Secretary of the Department of Health and Human Services that ensures that the researchers on this study cannot be forced to disclose any information about you that we collect as part of the genetic studies, including any DNA samples.

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